



Xuper 680CGS

Low-heat-input special manual electrode
For joining dissimilar & difficult-to-weld steels

Description:

Xuper 680CGS is a highly alloyed special manual electrode giving very high strength joints with excellent resistance to cracking, corrosion and oxidation. Fe-Cr-Ni-rich alloy deposit with austenitic structure, strengthened with delta-ferrite. Superior dilution tolerance allows use on a wide range of steels. Special rutile-basic flux coating for easy welding.

- CGS - Controlled Grain Structure - strength and ductility.
- Spray type metal transfer.
- Superb weldability for all steels.
- Low amperage - easy strike / re-strike.

Rod Identification:

Blue-grey coating, red lettering, gold grip-end tip.

Technical data:

Standards:

Tensile strength R_m : 770-850 MPa [DIN 50 145*]
Yield strength $R_{p0.2}$: >640 MPa [DIN 50 145*]
Hardness (as welded): 240-280 HV30 [DIN 50 133*]
Deposit density: ~7.6 g/cm³ [E+C procedure]
Effective yield RE: <110 % [ISO 2401]
Linear expansion ϵ : ~13.5 x 10⁻⁶ (20-300°C)
[E+C procedure]
Service temperature: <450°C for joining. Not for sub-zero temperature service.

*Test sample preparation: DIN 32 525, DIN 50 125

Applications:

Joining and buttering:

For difficult-to-weld steels, including: cast steel, heat-treated steel, high-carbon steel, manganese steel, stainless steel, tool steel and steels of unknown composition, plus dissimilar joining.

Wear-facing:

Machinable, low-friction, work-hardening deposit provides oxidation-resistant protection for all of the above base materials.

Industrial examples:

Xuper 680CGS is suitable for a very wide range of applications, including tool and die repairs, Rebuilding gear teeth, repairing cracks in machine casings, buttering layers and repairs on earthmoving and drilling equipment, and rebuilding worn shafts. It is also extremely useful for repairs where the base material is unknown.

Complementary E+C joining products:

XHD 2222 - manual electrode for low & high temperature service and thick sections
TigTectic 680 - GTAW welding rod
EnDOTec® DO*22 - GMAW, metal cored continuous electrode

Procedure for use:

Preparation:

For best results, remove contamination, cracks and worn metal from weld area. Prepare joints with a U/V (60°) or X profile (90°).

Preheating:

Generally not needed. If used, should be adapted to suit the base material and size of work-piece. Preheat to 150°C for IIW carbon equivalent <0.35; up to 250°C for carbon equivalent 0.35-0.50. Do not preheat austenitic manganese steels; keep cool.

Welding:

Current: AC/DC (+ve) $U_0 > 50$ V

| Diameter | 2.5 | 3.2 | 4.0 | 5.0 |
|----------|-------|--------|--------|---------|
| Amps | 45-85 | 60-110 | 90-150 | 145-200 |

Higher amperages for large work-pieces, and maximum deposition rate; lower amperages for small work-pieces, difficult welding positions and minimum dilution. Minimise arc length. Max. Inter-pass temperature: 300°C. Remove slag before each new pass.

Welding positions:



- First pass: electrode \varnothing 3.2 mm, triangular weave pattern.

Post-welding treatment:

Do not use heat treatment. Adjust cooling rate according to base material and size of work-piece.

Difficult dissimilar joining

Adjust procedure according to the composition of the base materials and size of the work-piece.

Storage and handling:

2.5mm supplied in 2.5kg DryPak containers, 3.2 & 4.0mm supplied in 5.0kg packs for optimum protection. Unprotected electrodes may absorb moisture, in which case redry for 1 - 2 hours at 200-250°C.

DIGITALWELD

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